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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/046,118	03/20/1998	CHARLES E. BOICE	EN998027	1827

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EXAMINER

WONG, ALLEN C

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 08/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/046,118

Applicant(s)

BOICE ET AL.

Examiner

Allen Wong

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 June 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,7,8,10-28 and 31-41 is/are rejected.
- 7) ☒ Claim(s) 3-6,9,29 and 30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments filed 6/11/02 have been fully read and considered but they are not persuasive.

2. Regarding pages 19-25 of applicant's remarks, please refer to the rejections and remarks from previous Office Actions: paper no. 20, dated on March 19, 2002, paper no. 16, dated on November 2, 2001, paper no. 13, dated on April 16, 2001, and paper no.8, dated on November 7, 2000.

Regarding pages 25-28 of applicant's remarks on independent claims 1, 19, 23, 34 and 37, applicant states that Reininger et al. does not teach the "still frame". The examiner respectfully disagrees. Again, please refer to the rejections and remarks from previous Office Actions: paper no. 20, dated on March 19, 2002, paper no. 16, dated on November 2, 2001, paper no. 13, dated on April 16, 2001, and paper no.8, dated on November 7, 2000.

Regarding pages 28-31 of applicant's remarks about the minimization of "pulsation artifacts", applicant asserts that Astle does not disclose, "minimize after decoding thereof, visually perceptible pulsation artifacts between still frames of a sequence of still frames." The examiner respectfully disagrees. On column 6, lines 25-47, Astle clearly teaches the minimization of "pulsation artifacts". Astle's col.6, lines 35-38 discloses that a block from the reference picture that matches with the current block (from current picture) will not line up along the boundaries into which the pictures are tiled, encoded and decoded. In other words, there are temporal artifacts caused by

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difference in compression ratios between two sequential pictures (ie. reference block versus current block). After decoding the series of encoded still images, Astle teaches that "selective filtering" can eradicate these artifacts in potentially artifactual areas without loss of important video data content (col.6, lines 51-60). Evidently, these block-edge artifacts are equivalent to the applicant's definition of pulsation artifacts because both are temporal artifacts caused by difference in compression ratios between two sequential pictures.

Regarding lines 3-7 on page 30 of applicant's remarks, Reininger already discloses the "process for adaptive encoding of a frame when the frame is a "still frame". See the rejections and remarks from previous Office Actions: paper no. 20, dated on March 19, 2002, paper no. 16, dated on November 2, 2001, paper no. 13, dated on April 16, 2001, and paper no.8, dated on November 7, 2000.

Regarding lines 12-15 on page 30 of applicant's remarks, applicant states that Astle does not discuss "the individual frames are being decoded are still frames having content similar to the present application." The examiner respectfully disagrees. Clearly, the reference picture is a still frame and the current picture is another still frame, where the reference picture and the current picture are still pictures that can have "content similar" to one another.

Regarding lines 18-20 on page 30 of applicant's remarks, applicant contends that Astle does not discuss a still frame or series of encoded still frames. The examiner respectfully disagrees. Astle discloses the sequence of encoded video images or still frames (col.1, lines 13-16).

Regarding lines 20-22 on page 30 of applicant's remarks, applicant states that Astle is not even discussing an encoding process. The examiner respectfully disagrees. Note Astle's Figure 1, element 100 is an encoding system and Figure 2, element 200 is the corresponding decoding system for encoding system 100.

Therefore, Astle meets the deficiencies of Reininger.

With regards to the newly added limitation, please see the rejection below. Note Reininger's Figure 2, element 28 is inside the forward analyzer 25, and that the data obtained by the forward analyzer is used for determining proper coding iterations of each frame prior to encoding.

Arguments about the disclosure of the "still frame" in Reininger have already been addressed in the previous Office Actions, paper numbers 8, 13, 16 and 20. The rehashing of old, circuitous, repetitive arguments does not aid the prosecution of the case. Please reconsider the incorporation of the dependent claims 3-6, 9, 29 and 30, along with all intervening limitations, into the current independent claims because claims 3-6, 9, 29 and 30 contain patentable subject matter.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1, 2, 7, 8, 10-28 and 31-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reininger (5,426,463) in view of Astle (5,751,861).

As for claim 23, Reininger discloses a system for encoding a sequence of video frames comprising:

a pre-encode processing unit (fig.2, element 25), said pre-encoding processing unit comprising:

a statistics measurement unit for use in determining prior to encoding whether a current frame of the sequence of frames comprises a still frame, said still frame comprising a frame with content substantially identical to content of a preceding frame (fig.2, element 28 counts the number of bits that allows the determination of whether a current frame of the sequence of frames comprises a still frame or I-picture among other preceding frames; also note element 28 is inside the forward analyzer 25, and that the data obtained by the forward analyzer is used for determining proper coding iterations of each frame prior to encoding);

a control unit (fig.2, element 27; note the processor modifies at least the quantization, element 14) for modifying at least one controllable parameter (parameter being bit allocation or quantization step size) employed in encoding said still frame (ie. I-picture) between still frames of a sequence of still frames when said statistics measurement unit determines said current frame to comprise said still frame; and

an encoding engine (fig.2, element 15 is a encode engine that encodes said current frame of the sequence of video frames using the at least one controllable encode parameter set by the pre-encode processing unit, element 25) for encoding said current frame of the sequence of video frames using the at least one controllable encode parameter set by said pre-encode processing unit.

Although Reininger may not appear to disclose the limitation “minimize after decoding thereof, visually perceptible pulsation artifacts between still frames of a sequence of still frames”, Astle discloses the elimination of the block edge artifacts (ie. pulsation artifacts) after the decoding of a series of encoded still frames or images (col.6, lines 25-47). Astle acknowledges the existence of these “artifacts” during the decoding process of a series of encoded still frames and also provides a means to eliminate these “artifacts”. Astle discloses that, more often than not, a block from the reference picture that matches with the current block will not line up along the boundaries into which pictures are tiled, encoded and decoded. In other words, when decoding image data, a still frame or a still macroblock at time  $t$  (where  $t$  is any given integer) will match, or have identical information, with a still frame or a still macroblock at time  $t+1$ . But there would be block edge artifacts or discrepancies when the still macroblock at time  $t$  match up with the still macroblock at time  $t+1$ . However, in order to eliminate these “artifacts” after decoding the series of encoded still images, Astle teaches the concept of “selective filtering” to eliminate these artifacts in potentially artifactual or problematic areas without wasting processing time and without removing important video data content (col.6, lines 51-60). Therefore, it would have been obvious

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to one of ordinary skill in the art to take the teachings of Reininger and Astle, as a whole, for expunging encoding/decoding distortions and errors so as to produce superior-quality images for display while maintaining at a highly efficient encoding rate.

Note claims 1, 2, 14, 19, 20, 31, 34, 35, 37, 38 and 41 have similar corresponding elements.

Regarding claims 7, 8, 24 and 25, Reininger discloses that still picture (ie. I frame), P frame or B frame types can be determined (col.6, lines 47-54; note fig.2, element 28 counts the amount of data and makes a frame-type determination from the amount of data acquired by the counter of the pre-encoding unit, element 25).

Regarding claims 10, 26 and 39, Reininger discloses that a predictive error can be determined by the “predict” section as shown in fig. 2, element 19.

Regarding claims 11-13, 15-18, 21, 22, 27, 28, 36 and 40, Reininger discloses an I frame adaptive quantization table (fig.4), a P frame adaptive quantization table (fig.6), and a B frame adaptive quantization table (fig.5) for adaptively adjust the quantizing unit's step size so that an appropriately encoding bit rate can be used depending on the type of frame that is being determined so to avoid encoding inaccuracies or “pulsation artifact.” Also, Reininger discloses that the pre-encoding unit's processor in figure 2, element 27 is used for the purpose of determining an appropriate quantization level so that a proper bit rate can be employed for encoding (col.6, lines 58-67 and col.7, lines 1-27).

***Allowable Subject Matter***



Claims 3-6, 9, 29 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen Wong whose telephone number is (703) 306-5978. The examiner can normally be reached on Mondays to Thursdays from 8am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Kelley can be reached on (703) 305-4856. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

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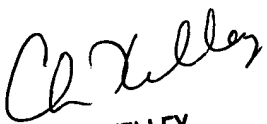
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872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

Allen Wong  
Examiner  
Art Unit 2613

AW  
August 20, 2002

  
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